

# **NONLINEARITY DETECTION OF WEAKLY NONLINEAR DYNAMIC-SYSTEMS USING CUMULANTS**

**MOUSTAFA, KAF; EMARASHABAIK, HE**

**TAYLOR FRANCIS LTD, INTERNATIONAL JOURNAL OF SYSTEMS SCIENCE; pp:**

**1167-1177; Vol: 23**

King Fahd University of Petroleum & Minerals

**<http://www.kfupm.edu.sa>**

## **Summary**

Non-linearity detection in dynamic systems is a fundamental issue in non-linear system identification. This problem is treated with the aid of the perturbation technique. A criterion for the detection of even non-linearities is developed in terms of the third-order cumulants of vector stochastic processes.

## **References:**

1. ANDERSON BDO, 1979, OPTIMAL FILTERING
2. BILLINGS SA, 1983, IEE PROC-D, V130, P193
3. DAVIS MHA, 1985, STOCHASTIC MODELING
4. HABER R, 1990, AUTOMATICA, V26, P651
5. MENDEL JM, 1991, P IEEE, V79, P278
6. NATKE HG, 1988, 6 IMAC P ORL FL, P1569
7. NAYFEH AH, 1981, INTRO PERTURBATION T
8. PARZEN E, 1962, STOCHASTIC PROCESSES
9. RABJMAN NS, 1976, AUTOMATICA, V12, P73
10. RAO TS, 1983, TEST LINEARITY STATI
11. ROTELLA F, 1988, INT J CONTROL, V48, P525
12. STEWART GW, 1973, INTRO MATRIX COMPUTA
13. VARLAKI P, 1983, 1983 ACI IASTED S

For pre-prints please write to: [abstracts@kfupm.edu.sa](mailto:abstracts@kfupm.edu.sa)